



U.S. Patent and Trademark Office,
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Attention:
Examiner, Timothy C. Vanoy,
Supervisor: Stanley Silverman

Art Unit: 1754

Appl. #: 09/525,176
Filing date: 03/14/2000

Applicants:
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#66/WS
11/10/02

Nov. 1, 2002

Response to Office Action, 10/03/2002

Title: MULTIWALL PERMREACTOR AND SEPARATOR PROCESSES FOR
FUEL CELLS AND POWER APPLICATIONS

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This is in response to the last Office Action of Oct. 03, 2002 concerning our pending patent application # 09/525,176, filed on 03/14/2000. The applicants have followed the instructions of the Examiner of the last Office Summary Action and have made an election and have further amended the application.

The elected process is the hydrocarbon and alcohol reforming reactions (I) to produce hydrogen by use of the invented tri-tubular (double wall) permreactor which is described in three amended independent claims namely 1, 19, and 37. The remaining claims are all amended dependent claims which further limit the invented processes.

The purpose of this invention as has been filed and supported by the consecutive applications of March, 2000, Sept. 2001, Jan. 2002, May 2002 is to disclose a novel reaction process which is useful in hydrogen and synthesis gas (hydrogen-carbon oxide mixture) production and utilization as quality fuel in fuel cells, turbines and engines. This is an inherent and unique part of the invention. The utilization of hydrogen and syngas in fuel cells, and power systems has to be disclosed and included within the invention in order to have completion of the invention with subsequent usefulness and applicability



benefits. A previous similar hydrogen rich gas production and utilization disclosure in fuel cells, engines and turbines is disclosed and described in our first patent 6,090,312 issued on July 18, 2000 which has a priority status for the current existing patent application. In order for the applicants to comply with the last Office Action election requirement and to preserve the usefulness of their patent, the applicants traverse this requirement for the election of a process for using the hydrogen as fuel (2), according to 37 CFR 1.143. Thus, this election with traverse is for a process for hydrocarbon and alcohol reforming reactions to produce hydrogen and using the hydrogen as a fuel. The election for use of hydrogen as a fuel is described in the dependent claims.

The remaining processes for producing hydrogen via different reactions (II and III) and using hydrogen in chemical hydrogenation synthesis (elections IV-XIII) have been withdrawn (non-elected) according to the Office Action request.

Dependent claims 2,20,38 describe the materials of the membranes used in the reforming and permeation processes. These are process dependent claims which further limit the hydrogen production processes described in independent claims 1, 19, 37. This is because the use of the specific membranes necessitates process steps to be performed inside the tri-tubular permreactors. As example use of a metal or non-porous inorganic membrane in the next-inner section will prevent all other species to permeate through except for hydrogen. This is a process step which can not be performed unless this specific membrane is selected.

The applicants respectfully request that the current application amendment is accepted by the Office and the claims contained within to be allowed.

Sincerely Yours,

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Ph.D. chemical engineering



PTO/SB92 (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

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